

**Influenza vaccine effectiveness 2010-11 in Portugal  
obtained by two methods: results from the EuroEVA study**

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**BACKGROUND** Every year the influenza vaccine is reformulated, so estimating the influenza vaccine effectiveness (VE) every season and in an early stage is important to support public health decisions. Since 2008, Portugal has been participating with the EuroEVA study in the I-MOVE (Influenza Monitoring Vaccine Effectiveness in Europe), financed by ECDC and coordinated by Epiconcept, which main objective is to estimate seasonal and pandemic vaccine effectiveness during and after the influenza season. In this context, we used two methods to estimate VE for the 2010-11 seasonal influenza vaccine, both in the elderly and in all age groups.

## TEST NEGATIVE DESIGN (TND)

## METHODS

## General Design

A case-control approach was used, where laboratory confirmed influenza cases (ILI+) were compared to laboratory negative influenza ILI patients (ILI-).

On a weekly basis, each GP selected systematically ILI patients using the EU ILI case definition.

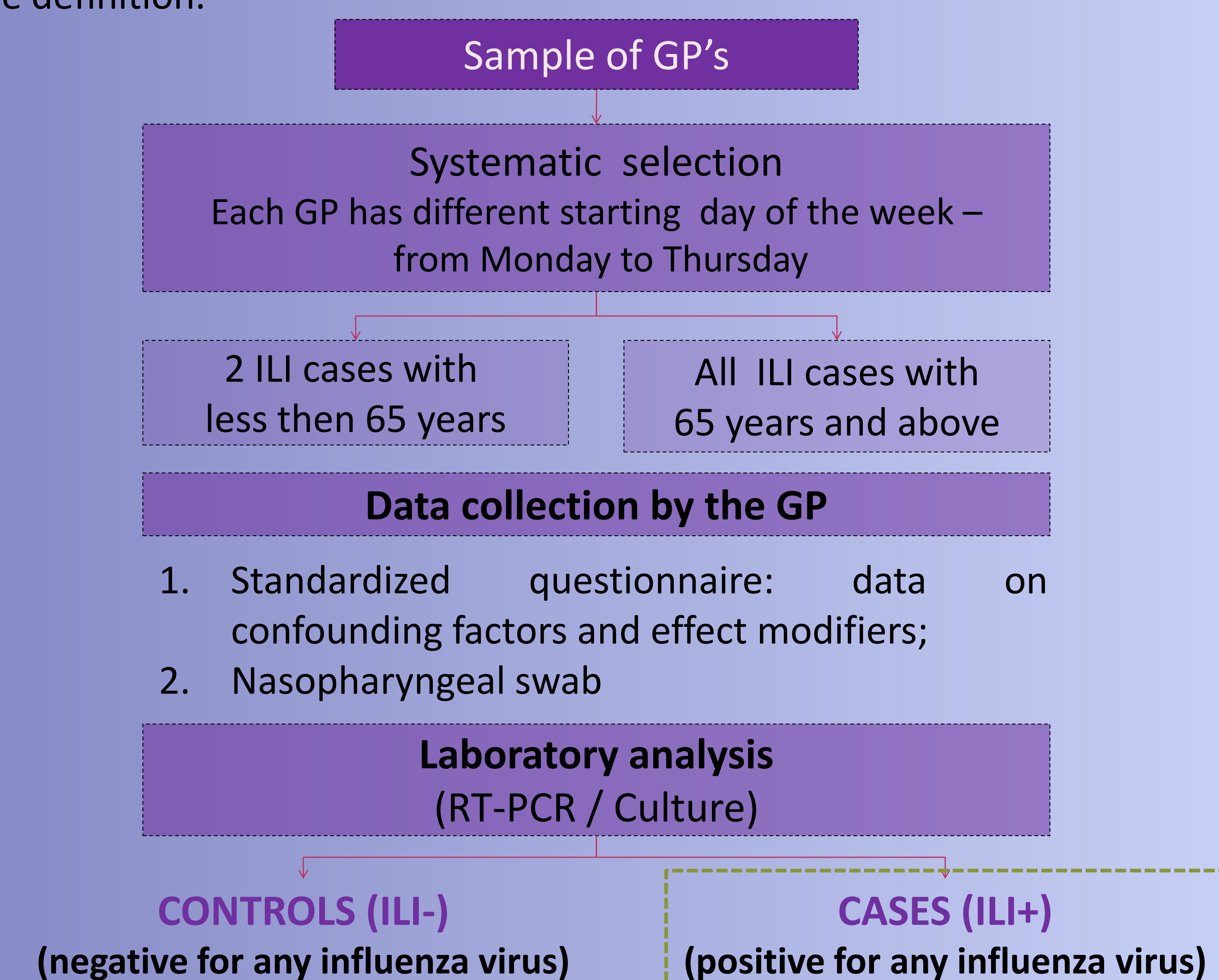


FIGURE 1. DESIGN AND RECRUITMENT FLOW PROCESS

## Vaccination status

Individuals vaccinated more than 14 days before disease onset.

## Statistical analysis

VE was estimated as one minus the odds ratio of being vaccinated in cases versus controls adjusted for confounders by logistic regression.

## RESULTS

In this season, 2010-2011, the seasonal vaccine coverage in **Controls** was significantly higher (17.4%) than in **All Influenza** cases (ILI+) (4.2%) (Figure 3).

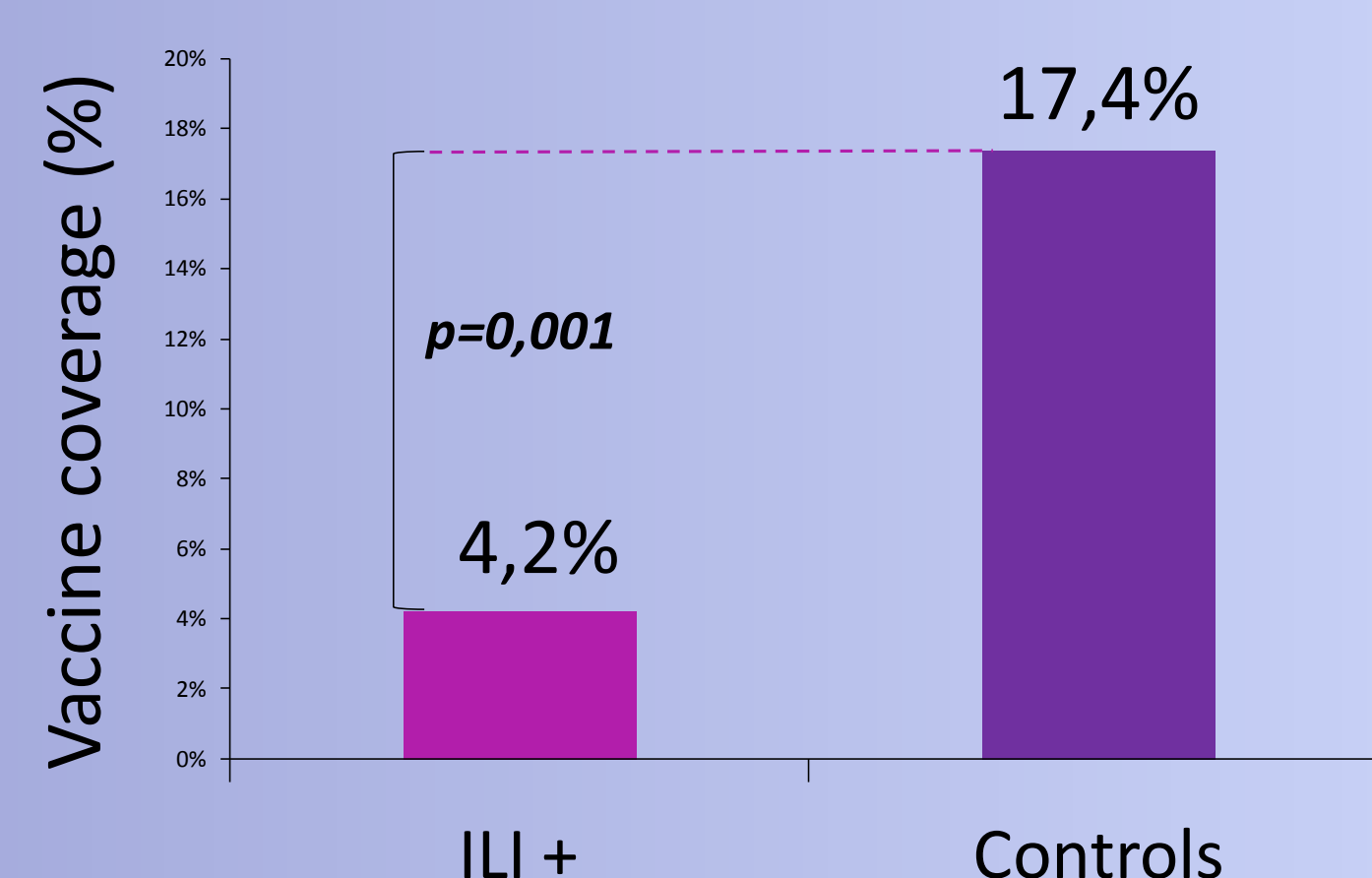


FIGURE 3. VACCINE COVERAGE IN CASES (ILI+) AND CONTROLS (ILI-)

TABLE 1. CRUDE AND ADJUSTED SEASONAL 2010-11 VACCINE EFFECTIVENESS AGAINST INFLUENZA			
Crude		Adjusted*	
VE	CI95%	VE	CI95%
<b>79.7</b>	44.2-93.6	59.0	-61.8 – 89.6

\* Data used in the estimates from week 45 till week 11; VE estimates adjusted for age group, pandemic and seasonal vaccine 2009-10, any chronic disease, target group and month of onset:

**CONCLUSIONS** VE point estimates obtained by the two methods were very similar and an explanation for this consistency could be the fact that the seasonal vaccine coverage estimates between ILI- (17.4%) and the population based telephone survey (17.5%) were also very close. Nevertheless, and due to small sample size, our study was unable to estimate VE for specific seasonal vaccine target groups. Further efforts should be done to increase sample size, mainly in the elderly population.

## SCREENING METHOD

## METHODS

## General Design

The 2010-11 seasonal vaccine coverage (VC) was compared between a sample of ILI cases positive for influenza with the vaccine coverage estimated in the general population. Vaccine coverage in the population was obtained from a population based sample (**ECOS sample**), that corresponds to 3208 individuals.

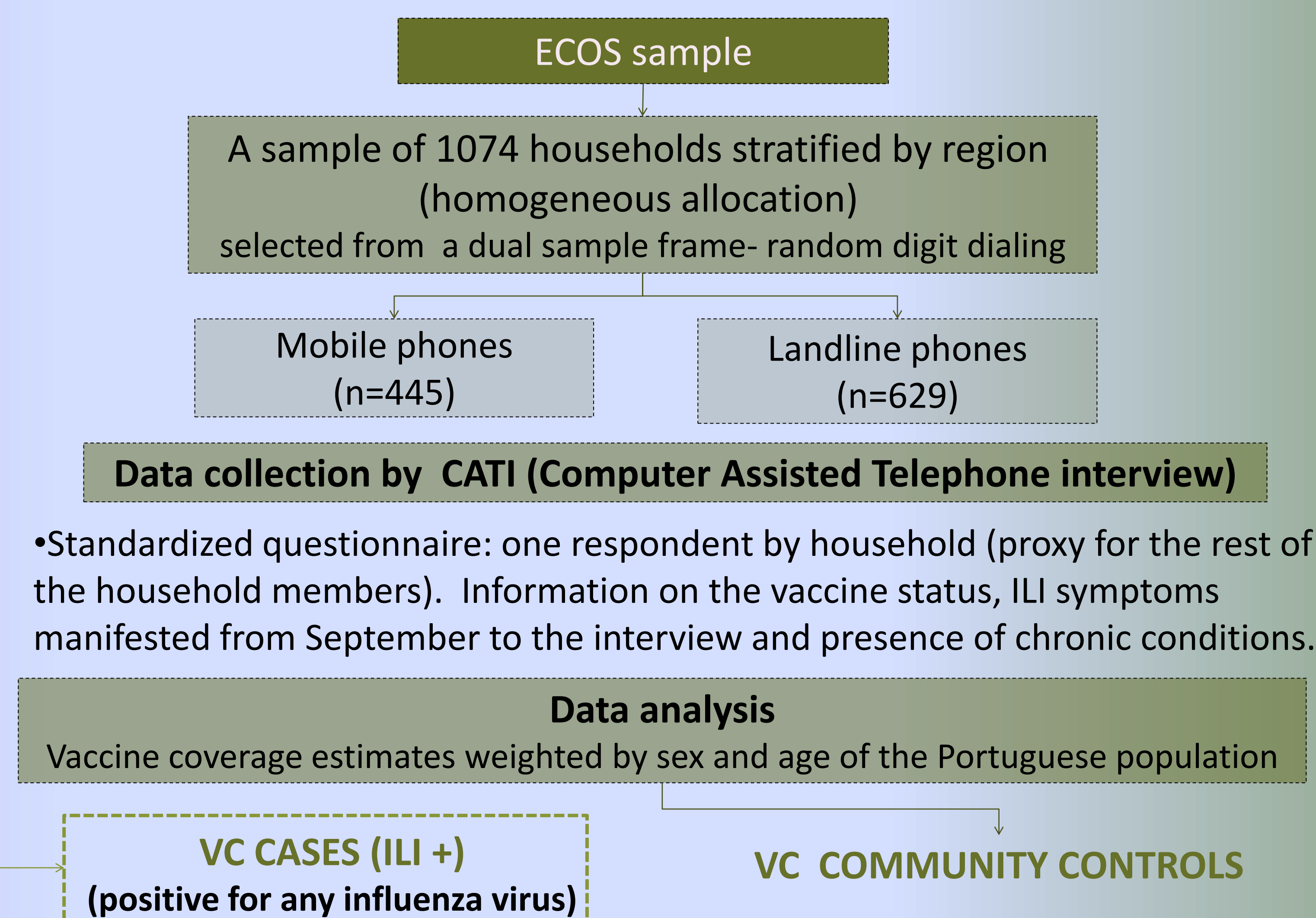


FIGURE 2. DESIGN AND RECRUITMENT FLOW PROCESS

## Vaccination status

Individuals vaccinated more than 14 days before disease onset.

## Statistical analysis

VE was estimated by comparing the proportion of cases vaccinated to the vaccine coverage in the source population using the Orenstein formula and the Farrington method to adjust for confounders.

## RESULTS

Considering the Screening method, the vaccine coverage in controls (from the community) was higher than the coverage in ILI+ cases (Table 2).

Crude 2010-11 seasonal  
VE estimate was 79.4%  
(CI95% 53-91) (Table 3).

After adjustment, the VE estimates decreased to 64% (CI95% 17-84), all results statistically significant.

TABLE 2. VACCINE COVERAGE ON CASES ILI+ AND COMMUNITY CONTROL, BY AGE GROUP AND PRESENCE OF A CHRONIC CONDITION

	Community control	ILI + (v/n)
All	17.5	4.2 (6/143)
0-64 yrs	10.8	2.9 (4/139)
≥65 yrs	48.3	50.0 (2/4)
No chronic	9.7	2.4 (3/127)
Any chronic	33.0	18.8 (3/16)

v = nr of vaccinated: n = nr of cases

TABLE 3. CRUDE AND ADJUSTED 2010-11 VACCINE EFFECTIVENESS AGAINST ILL<sup>a</sup>, BY AGE GROUP AND PRESENCE OF A CHRONIC CONDITION

	Crude		Adjusted*	
	VE (%)	CI95%	VE (%)	CI95%
All	79.4	53.4-90.9	63.9	16.9-84.3
0-64 yrs	87.2	65.3-95.2	71.3	22.4-89.4
65 + yrs**				
No chronic	77.5	29.3-92.8	64.2	18.7-91.8
Any chronic**				

\* Adjusted for confounding (age group and presence of chronic diseases) using the Farrington method